

**ARTICLE III.  
SYSTEM EXTENSION AND CONNECTION PROCEDURE,  
PLANS AND SPECIFICATIONS**

**SECTION 3.01: Submission to Authority and Approval**

The Developer shall provide written notice to the Authority requesting a statement of capacity for all connections, construction, expansion, or extension to the sewer system.

Connections requiring modifications or extensions to the sewer system shall require the Authority's review for compliance with the Rules and Regulations. The Developer shall be required to enter into a construction agreement with the Authority prior to the Authority accepting or reviewing proposed plans. An example construction agreement can be found in Appendix F of these rules and regulations.

The Developer shall submit two (2) complete sets of Plans of the proposed sewer construction for review by the Authority. The Authority and its Consultant will review the plans for conformance with the minimum performance standards specified herein. The Authority will provide comments as required on the entire proposed sewer construction; however, approval will only be given for proposed connections to Authority owned infrastructure.

One (1) marked or approved set will be returned to the Developer after review by the Authority. Plans shall be prepared by a Professional Engineer, registered in the Commonwealth of Pennsylvania, and shall bear the original impression seal of the Engineer who prepared the Plans.

After the design drawings have been approved, the Authority shall be provided with one (1) set of Plans for its use, at the start of construction.

**SECTION 3.02: Minimum Standards for Construction Drawings**

The Plans for construction shall include the following:

- A. An overall general or location plan to clearly indicate the point or points of connection to the existing or future sanitary sewer system. At the points of connection, the DEP permit number and the permittee of the existing sewers shall be indicated. The permit data will be supplied by the Authority upon request.
- B. A list of plans shall be incorporated within the folio of plans of the proposed sewer project, and shall clearly indicate the sheet or plan number with a concise description of the scope or location of the sewer construction shown on a particular sheet or plan.
- C. The Plans shall be at a scale of 1 inch = 50 feet. Uniform sheet size shall be 24" x 36".
- D. A profile of the street, sewer and ground surface over the sewer shall be shown with pipe sizes and grades between manholes clearly shown. In addition, a ground profile

at the building setback line shall be shown. The profile shall be drawn to a horizontal scale of 1 inch = 50 feet and a vertical scale of 1 inch = 5 feet.

- E. Inverts of sewers at manholes and manhole lid elevations shall be shown and referenced to Benchmark elevations. A minimum of one (1) benchmark shall be shown on each sheet of the construction plans.
- F. Structures to be served shall be located in plan and profile with the basement elevations clearly indicated.
- G. Street drainage or other utilities, crossing, paralleling or otherwise causing potential interference with the proposed construction shall be clearly shown in both the plan and profile.
- H. Proposed lateral connections shall be shown. Minimum size of laterals shall be 6 inches in diameter. "Wye" and lateral ends shall be stationed along the centerline of the sewer between manholes with a length distance either left or right of the centerline of the sewer main. A lateral shall be constructed to each lot.

Standard construction details can be found in Appendix E of these rules and regulations.

### **SECTION 3.03: Minimum Standards for Record Drawings**

The Authority shall be provided an electronic copy of Record Drawings and the desired number of prints of all facilities constructed within its system. Where the sewer construction does not directly impact the Authority's infrastructure, no Record Drawings need to be submitted to the Authority. Where sewer construction impacts the Authority's infrastructure, an electronic copy (pdf format) and one (1) set of Record Drawings shall be provided to the Authority and marked as approved by the Developer.

The Record Drawings are to show the system as installed with all revisions. Manholes, wyes, and laterals are to be correctly stationed with respect to centerline of manholes with depth, length of laterals, and invert to centerline of manholes with depth, length of laterals, and invert elevation at the end of the lateral noted. A three (3) inch diameter post is to be placed at the end of the lateral and shall extend from the invert of the lateral to a minimum of three (3) feet above the ground. The total distance from the top of the post to the invert of the lateral shall be indicated on the Record Drawings at the proper centerline station either left or right. The Record Drawings shall contain thereon the same information required for the design drawing corrected to as-constructed conditions and shall include the locations of all streets and utilities (both main lines and laterals) that parallel or cross the installed sanitary sewers. The location of the lateral end, shown in the plan view, shall be graphically correct with respect to property corners, manholes, power poles, etc.

### **SECTION 3.04: Specifications for Connection**

No connection shall be made to the Authority's infrastructure unless the manner in which the

connection is made and the materials and workmanship employed in affecting such connection shall comply with the requirements of the Authority. It shall also be necessary for all connections to comply with any special requirements imposed herein.

**SECTION 3.05: Illegal Discharges**

Any person who discharges or permits to be discharged any material to the Sewer System except through approved connections will be subject to charges as provided in Article VI in addition to being subject to the penal provisions of any appropriate Municipal Ordinance.

**SECTION 3.06: Legal Requirements**

All Developers and qualified contractors installing connections to the Authority's Sewer System shall comply with all of the Authority's rules, regulations and guidance and all Federal, State, and local requirements, including but not limited to the following:

1. The latest Municipality Ordinance governing sewer connections and the Municipality Road Occupancy Regulations;
2. Pennsylvania Law which requires that a utility be notified in advance of work to be performed in the area of a utility's facilities;
3. Federal Occupational Safety and Health Administration Regulations;
4. Pennsylvania Department of Transportation Regulations for work within State Highway rights-of-way, such as, but not limited to: (i) permits, (ii) blasting bonds, (iii) construction methods and materials, (iv) inspection, (v) traffic control and (vi) maintenance bonds;
5. Department of Environmental Protection Streams Encroachment and Soil Erosion and Sedimentation Control Requirements.
6. Pennsylvania Department of Environmental Protection (DEP) rules, regulations and requirements are to be considered incorporated into these specifications as if fully written herein.

Any regulations which are more stringent shall have precedence over the applicable section herein. It shall be the respective Municipality's responsibility for complying with planning and permitting requirements.

The design and construction of sanitary sewer facilities shall, at a minimum, be completed in accordance with the latest revision of the Domestic Wastewater Facilities Manual.

**SECTION 3.07: Special Conditions**

Whenever, in the opinion of the Engineer or other duly authorized representative of the Authority, special conditions require additional safeguards or more stringent specifications to

be observed, then, notwithstanding any other provisions of this Resolution, or requirements of the Borough or Township, the Authority specifically reserves the right to refuse to permit a connection to be made to its Sewer System until such special requirements or specifications as may be stipulated by the Authority have been satisfied.

**SECTION 3.08: Contractor Qualifications**

No Developer or contractor shall connect to or perform work on the Authority's facilities without prior approval by the Authority. The Contractor shall provide evidence of past experience in excavation, blasting, plumbing, or electrical work, and by providing evidence of adequate insurance coverage. Evidence of insurance coverage shall be presented to the Authority in the form of insurance certificates and shall indicate coverage with the following minimum limits:

**GENERAL LIABILITY**

Bodily Injury - \$1,000,000  
Property Damage - \$1,000,000

(Contractual liability coverage to fund the hold-harmless agreement contained in the Authority's registration application and coverage of independent contractors, and completed operations shall also be included.)

**AUTOMOTIVE**

Bodily Injury - \$1,000,000  
Property Damage - \$1,000,000

Insurance certificates shall be kept current with the Authority during the period the contractor is installing or connecting to the facilities of the Authority.

Removal of a contractor from performing work on the Authority's system may be conducted for any of the following reasons:

1. Contractor fails to maintain the required certificates of insurance specified by the Authority;
2. Contractor non-compliance with the Borough, Township or Authority requirements;
3. Excessive expenditure of Authority personnel time and effort to monitor contractor work performance;
4. Noncompliance with the quality of work required by the Authority.

**SECTION 3.09: Review of Submittals**

Review of submittals is only for conformance with information provided in these specifications. Submittals (shop drawings) shall constitute project-specific information,

including product literature, product dimensions, manufacturer's instruction, etc. The Developer or its Contractor is responsible for dimensions to be confirmed and correlated on the project site, for information that pertains solely to the fabrication process or to techniques of construction, and for the coordination of the work of all trades.

The procedure for obtaining the Authority's review of shop drawings shall be as follows:

- A. The Developer shall transmit a minimum of three (3) copies of complete submittals to the Authority for review. The submittals shall be accompanied by a letter of transmittal, in triplicate, containing the name of the project, the name of the Contractor, the number of submittals, titles, and other requirements. Unless otherwise specified, such submittals shall be submitted at least fourteen (14) calendar days before they are required for fabrication.
- B. The Authority and/or its Consultant will review the submittals and provide comments, as required. If no comments are required, a response of "no exceptions are taken" will be provided.

**SECTION 3.10: Collection Sewer Pipes and Fittings (Gravity and Force Main)**

The following pipe and fittings are approved for use:

1. PVC SDR-35 Pipe and Fittings:
  - A. Polyvinyl chloride (PVC) pipe, used for gravity sewer construction, shall meet or exceed the requirements of ASTM D 3034 for 4-inch through 15-inch pipe. The PVC sewer pipe shall have a minimum standard dimension ratio (SDR) of 35 and the minimum pipe stiffness, as tested in accordance with ASTM D 2412, shall be 46 psi when measured under 5 percent deflection at 73 degrees Fahrenheit. Pipe and fittings shall be manufactured with integral wall bell and spigot gasket joints.
2. Ductile Iron Pipe and Fittings:
  - A. All ductile iron pipe furnished for diameters four inches (4") through twenty-four inches (24") shall be manufactured in accordance with ANSI Specifications A21.51, in eighteen foot (18') lengths with single rubber gasket joints. Four inch (4") diameter pipe shall be Class 51 wall thickness, and six inch (6") through twenty-four inch (24") diameter pipe shall be Class 50 wall thickness. All ductile iron pipe shall be cement lined.

Forcemains shall be constructed of PVC pressure pipe, ductile iron or high density polyethylene (HDPE). Pipe dimension ratio and pressure classification shall be selected based on system design conditions. All fittings on force mains shall be double cement lined ductile iron.

**SECTION 3.11: Building Sewer Connections**

Building Sewers constructed as a part of an extension shall be consistent with the requirements of Article II.

**SECTION 3.12: Cleanouts**

Clean-outs in general shall not be permitted as a replacement for manholes; they are however permitted on building sewers and shall meet the requirements of Article II.

**SECTION 3.13: Sewer Pipe and Service Lateral Bedding**

Sewers shall be provided with stone bedding consisting of AASHTO No. 57 or 67 coarse aggregate or suitable substitute if recommended to a higher degree by the pipe manufacturer and approved by the Authority following the submission of supporting information. Exposed bedrock shall not be considered a suitable substitute. A minimum of six (6) inches of stone is required underneath the pipe with stone bedding to the springline of the pipe. Initial pipe backfill shall be of the same stone from the springline of the pipe to one foot above the pipe.

**SECTION 3.14: Sewer Pipe Couplings**

Pipe couplings on mainline sewers shall be ductile iron solid sleeve, mechanical joint by mechanical joint with styrene butadiene rubber (SBR) gaskets. Non-shielded flexible couplings shall not be used.

Repair couplings placed on vitrified clay pipe shall be cradles with concrete having a minimum compressive strength of 3,000 psi.

**SECTION 3.15: Pipe Laying**

All pipe shall be laid true to line and grade, as shown on the plans by use of a laser. The excavation shall be backfilled with stone bedding, thoroughly compacted by machine compactor equipment, and shaped to fit the barrel of the pipe. A minimum of four (4) feet of cover is required over all pipes.

Bell holes shall be excavated at all joints to permit proper assembly of the joint. Joints shall be made in accordance with the manufacturer's recommendation for the type of pipe used.

All pipe and appurtenances shall be carefully inspected before being placed, such that no cracked, broken, or defective pipe or appurtenances shall be used in the work. All pipes shall be laid with bells upstream, and joints shall be made in such a manner that a smooth invert is provided.

The interior of the sewer shall be kept clean as the work progresses, and the open end shall be bulk headed when pipe laying is in progress.

After the pipe has been laid true to line and grade and the joints made properly, the Contractor shall furnish and install select granular backfill material, thoroughly compacted, to a level not less than twelve (12) inches above the crown of the pipe. The backfill material placement and compaction shall be done in a manner which will protect the pipe from damage or misalignment. Pipe which is damaged or moved out of alignment shall be re-laid by the Contractor at his expense.

After the select granular backfill material has been placed and compacted to a level twelve (12) inches above the top of the pipe, the Contractor shall place the backfill in the trench, as required. The trench backfill may be placed by machine methods, provided that the Contractor exercises care to protect the sewer from damage.

### **SECTION 3.16:      Underground Warning Tape**

For the purposes of early warning and identification of underground wiring and pressure piping during trenching or other excavation, continuous warning tapes shall be provided in all trenches. Tapes shall be buried to a depth of six (6) to twelve (12) inches below finished grade. In pavement, tapes shall be buried six (6) inches below the top of the subgrade. The underground warning tape shall be a magnetic polyethylene tape, three (3) inches wide with 1-inch lettering.

### **SECTION 3.17:      Manholes**

Sanitary sewer manholes shall be precast reinforced concrete comprised of precast bases, riser sections and top sections, as required. Concrete shall be Type II sulfate resistant Portland cement with a minimum compressive strength of 4,500 psi (at 28 days). Manholes shall be watertight with sections sealed at joints using a double layer of preformed plastic sealing compound (i.e. RAM-NEK, ConSeal, or equal). Manhole diameter shall be selected based on sizing and configuration of inlet and outlet sewers. Except in special instances, flow channels shall be pre-formed to meet design requirements.

Manhole Steps: Reinforced plastic step composed of a steel reinforcing bar completely encapsulated in a polypropylene copolymer compound. Steps shall be pre-aligned vertically.

Pipe Openings: Custom preformed during manufacturing of each base and riser section requiring an opening. Resilient gasket type pipe opening seals to be integrally cast as manufactured by A Lok Products (A-LOK X-Cel Connectors) or Hamilton Kent (Tylox Dual Seal II Series). Provide non-shrink mortar between pipe and manhole opening in accordance with seal manufacturer's recommendation.

Manhole Frame and Cover: Gray cast iron designed for AASHTO HS-20 loading, free of defects. Frame shall bolt to manhole top section using Type 316 stainless steel bolts and washers. Cover to be provided with one piece factory installed neoprene gasket and cover shall be locking. Provide watertight frames and covers where manhole has the potential to be covered by water or as directed by the Authority.

Grade Rings: Use precast concrete or rubber composite grade rings to level and adjust manhole frames. Match bolt pattern to frame. Seal between grade rings and between grade

rings and manhole components using preformed plastic sealing compound or waterproof mortar, where applicable.

Installation: Install manhole on 8 inches of compacted 2A course aggregate.

**SECTION 3.18: Connection to Existing Manholes**

Connect to existing manholes by cutting the required opening using core boring. Seal between the pipe and opening with an expandable sleeve. While boring or making the connection, do not permit groundwater, surface water or debris from entering the sewer system. Remove and reform the flow channel as required to accommodate the new connection.

**SECTION 3.19: Connecting to Existing Sewer**

The new sewer shall be constructed at a uniform grade to meet the existing sewer at a slightly higher invert elevation than the invert of the existing sewer at the point of proposed connection.

For proposed sewers of a diameter equal to the existing sewer, a new manhole shall be constructed over the existing sewer, with the new sewer invert 0.10 feet to 0.25 feet higher than the existing upstream invert. After the manhole has been constructed, the manhole upstream on the existing sewer shall be stopped, and the existing sewer pipe in the new manhole shall be broken and removed, and the channel grouted to the invert of the removed sewer pipe. After the debris has been removed, the existing downstream sewer shall be flushed, and any debris in the downstream manhole shall be removed. After this cleanup operation, the upstream stopper shall be removed.

Proposed sewers of a diameter larger than the existing sewer to which it is to be connected will not be normally permitted without providing additional capacity to the existing sewer.

**SECTION 3.20: Notification of Authority Inspector**

The Developer shall give advance notice to the Authority's representative when facilities are ready to be connected to the Authority System. This advance notice shall be at least 48 hours prior to the desired date and time of the connection. Inspections and tests shall only be performed during the hours posted by the Authority's inspector.

**SECTION 3.21: Open Trench Inspection of Collection Sewers, Building Sewers and Service Laterals**

No connection or pipe trench shall be backfilled unless and until the Collection Sewer, Service Lateral, or Building Sewer installation has been inspected, tested and approved by the Authority's representative.

**SECTION 3.22: Air Testing of Gravity Sewers**

An air test shall be performed on all gravity sewer lines including Collection Sewers,



Building Laterals and Service Laterals in accordance with the form on the following page. Develop and review test procedures with the Authority's representative prior to the test. Air tests shall be conducted in the presence of the Authority's representative on the line being installed from the point of connection to the end.

Use of a new connection to the Sewer System will not be permitted until the installation has been inspected, tested, and approved in accordance with the Authority's procedures.

**SECTION 3.23: Vacuum Testing of Manholes**

All new manholes shall be vacuum tested in accordance with ASTM C1244, "Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test Prior to Backfill". Develop and review test procedures with the Authority's representative prior to the test. Existing manholes that have been modified and dog house manholes will be subjected to a visual test.

**SECTION 3.24: Miscellaneous**

Any necessary infrastructure not specified above shall be submitted to the Authority for approval. This shall include low pressure sewer systems, pumping stations or any other infrastructure deemed necessary for connection to the Authority's system.

**LOW PRESSURE AIR TEST**

Check One:

Main Line  
Main Line & Lateral

Lateral

Upstream MH

to Downstream MH

Check List:

- 1
- 2
- 3

  
  


Line allowed to stabilize 5 mins.  
Test pressure adjusted for ground water table, if applicable  
Air valve opened and gage checked for stuck needle

**TEST PRESSURE**

Specified 3.5 psi      Ground Water Adjustment Pressure +      Field Test (see table below) For      SPECIFIED TIME

Ground Water Table Adjustment (Height over Pipe)  
VF X .43 psi =      psi

Length of Main Sewer =      =      time from table below  
Length of Lateral =      =      time from table below

Passed       Rejected       Date \_\_\_\_\_

Authority Representative

**MINIMUM SPECIFIED TIME REQUIRED FOR A 1.0 PSIG PRESSURE DROP FOR SIZE AND LENGTH OF PIPE INDICATED FOR Q = 0.0015**

3:46	597	.380 L	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46
5:40	398	.854 L	5:40	5:40	5:40	5:40	5:40	5:40	5:42	6:24
7:34	298	1.520 L	7:34	7:34	7:34	7:34	7:36	8:52	10:08	11:24
9:26	239	2.374 L	9:26	9:26	9:26	9:53	11:52	13:51	15:49	17:48
11:20	199	3.418 L	11:20	11:20	11:24	14:15	17:05	19:56	22:47	25:38
14:10	159	5.342 L	14:10	14:10	17:48	22:15	26:42	31:09	35:36	40:04
17:00	133	7.692 L	17:00	19:13	25:38	32:03	38:27	44:52	51:16	57:41
19:50	114	10.470 L	19:50	26:10	34:54	43:37	52:21	61:00	69:48	78:31
22:40	99	13.674 L	22:47	34:11	45:34	56:58	68:22	79:46	91:10	102:33
25:30	88	17.306 L	28:51	43:16	57:41	72:07	86:32	100:57	115:22	129:48
28:20	80	21.366 L	35:37	53:25	71:13	89:02	108:50	124:38	142:26	160:15
31:10	72	25.852 L	43:05	64:38	85:10	107:43	129:16	150:43	172:21	193:59
34:00	66	30.768 L	51:17	76:55	102:34	128:12	153:50	179:29	205:07	230:46

**ARTICLE IV.  
MAINTENANCE OF SEWER FACILITIES**